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U.S. Department of Agriculture
PESTICIDE DATA PROGRAM
Progress Report

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Although the U.S. food supply is one of the safest in the world, public concern still exists about the effects of agricultural pesticides on human health and environmental quality. Chemical residues on domestic and imported food have been of particular interest. Recognizing the need to improve the quality and quantity of information available on chemical residues, the U.S. Department of Agriculture (USDA) proposed the Pesticide Data Program (PDP) as part of its fiscal year 1991 budget. Congress approved funding in January 1991, and program operations began in May. PDP provides data on pesticide use and residue detections, which help form the basis for conducting realistic dietary risk assessments and evaluating pesticide tolerances. The Environmental Protection Agency (EPA) uses PDP data to address the reregistration of pesticides. Other Government agencies use the data to respond more quickly and effectively to food safety issues.

Coordination of PDP is multi-departmental with planning, policy, and procedural efforts conducted by USDA, EPA, and the Food and Drug Administration (FDA). USDA signed a Memorandum of Understanding (MOU) with EPA and FDA to provide oversight and direction for PDP through an Executive Steering Committee.

USDA

- Collects data on agricultural chemical usage and factors influencing chemical use;
- Collects pesticide residue data through cooperation with nine participating States;
- Provides EPA and FDA with consumption data on foods;
- Produces residue and usage data for EPA, FDA, and the public; and
- Provides pesticide alternative practices.

EPA

- Coordinates with USDA data collection for commodities and pesticides;
- Receives pesticide residue and usage data from USDA, FDA, State, and private sources to support pesticide reregistration and special review decisions;
- Receives food consumption data from USDA; and
- Conducts dietary risk assessments.

FDA

- Shares residue data-recording information, commodity coding systems, and commodity preparation information with USDA;
- Collects residue data to enforce EPA-established tolerances and FDA administrative guidelines for food; and
- Conducts total diet surveys.

■ USDA Structure

The four USDA agencies involved in PDP are the Agricultural Marketing Service (AMS), the National Agricultural Statistics Service (NASS), the Economic Research Service (ERS), and the Agricultural Research Service (ARS). AMS was selected as the lead agency to coordinate, implement, and manage the various facets of the program.

- AMS**
 - Coordinates activities of USDA agencies and cooperating State agencies;
 - Manages pesticide residue sampling and testing procedures;
 - Designs and maintains an automated information system for pesticide residue data; and
 - Publishes annual summaries of residue detections.
- NASS**
 - Develops and provides statistically reliable State-level agricultural chemical usage data on food crops.
- ERS**
 - Analyzes NASS and AMS data to determine the impact various regulations and production practices might have on U.S. agricultural production, the Nation's food supply, and consumers; and
 - Assesses the economic implications of alternative pest control policies and practices on producers, marketers, and consumers.
- ARS**
 - Conducts nationwide surveys of food used by households and food intake by individuals; and
 - Translates data on foods as consumed into forms that can be linked with pesticide residue data.

■ Program Operations

AMS developed cooperative agreements with nine States -- California, Colorado, Florida, Michigan, New York, North Carolina, Ohio, Texas, and Washington -- to collect and analyze fresh and processed produce for pesticide residues. These States were selected because of their substantial production of fruits and vegetables, regional diversity, interest in pesticide residue data, and laboratory facilities, plus their technical expertise in pesticide-related issues. Together, these nine States, plus neighboring States in their distribution network, represent more than 50 percent of the Nation's population and provide the basis for making national inferences from the residue data.

Currently, PDP collects data on 12 commodities -- apples, bananas, carrots, sweet corn (canned and frozen), grapes, green beans, oranges, peaches, peas (canned and frozen), potatoes, spinach, and wheat. Four other commodities (broccoli, celery, grapefruit, and lettuce) are no longer in the program. The number of pesticides routinely monitored by PDP has increased substantially -- from 11 at the program's inception in 1991 to the current total of 55. These pesticides include insecticides, fungicides, herbicides, and growth regulators. PDP testing facilities have also detected and reported seven other compounds.

Samples are prepared emulating the practices of the average consumer, to more closely represent actual exposure to residues. The information gathered includes the post-harvest application of fungicides and growth regulators and takes into account pesticide degradation that occurs in transit and storage. All facilities collecting samples follow detailed Standard Operating Procedures (SOPs).

PDP laboratory operations are designed to detect, verify, and report low-level pesticide concentrations. Participating testing facilities use state-of-the-art instrumentation, uniform laboratory procedures, and an effective quality assurance program based on EPA's Good Laboratory Practices. Laboratories verify all residue detections and participate in PDP's Check Sample Program. Periodic audits of sampling and laboratory operations are conducted to ensure compliance with PDP SOPs.

An extensive information management system was designed for storing the data. Recently, PDP implemented a new enhancement to the system, which allows for data to be electronically transferred from the testing facility directly to the Residue Branch database.

■ Current Status

AMS PDP has published four data summaries (May-December, 1991; January-June, 1992; Calendar Year 1992; and Calendar Year 1993).

AMS modified PDP's sampling protocol and implemented a statistically defensible sampling system in January 1993. Using the revised protocol, the probability of selecting a sampling site is based on the quantity of produce distributed annually. Using PDP's residue data, NASS will assist AMS in making national inferences for estimating the levels of pesticide residues in food.

State laboratories perform PDP analyses for organochlorine, organophosphate, organonitrogen, organosulfur, and N-methyl carbamate classes of pesticides. In addition, specific analyses for avermectin, benomyl, 2,4-D, and formetanate are performed by the APHIS Laboratory in Gulfport, MS, and the AMS Eastern Laboratory in Gastonia, NC. A national sample survey of wheat, conducted by the USDA Grain Inspection, Packers and Stockyards Administration, began in January 1995.

PDP continues to amend the commodities tested to further meet EPA's risk assessment needs and respond more fully to the National Academy of Science (NAS) report "Pesticides in the Diets of Infants and Children." All PDP commodities for 1995, with the exception of spinach, are considered to have high consumption among infants and/or children.

NASS NASS has published three surveys related to PDP activities, in conjunction with ERS: 1) Fruit and Nuts Chemical Use Survey in 14 Major Producing States, 1991 crop year; 2) Vegetable Chemical Use Survey in 14 Major Producing States, 1992 crop year; 3) Fruit Chemical Use Survey in 9 Major Producing States, 1993 crop year; and 4) Vegetable Chemical Use Survey in 14 Major Producing States for the 1994 crop year will be published in June 1995.

ERS ERS has published several reports analyzing results of the Pesticide Data Program, which include: 1) Economic Issues Associated with Food Safety, Food and Consumer Economics Division, Staff Paper Number AGES 9506; 2) Pesticide and Fertilizer Use and Trends in U.S. Agriculture, Agricultural Economic Report Number 717; 3) Pesticide Residues and Food Safety, Agricultural Resources and Environmental Indicators, Ag. Handbook Number 705; 4) The Extent of Adoption of Integrated Pest Management in U.S. Agriculture, AIB Number 707.

ARS In January 1994, ARS began a "Continuing Survey of Food Intakes by Individuals (CSFII) 1994-96," the third in a series of food consumption surveys. This 3-year survey will collect food intake data from about 15,000 individuals, including children and elderly persons.

■ Future Actions

In July, a new pesticide, Vendex, will be added as a specific residue test in four fresh fruit commodities. Contingent on future funding, PDP proposes to add corn grain, milk, and soybeans to the sampling profile. These are all considered high-consumption foods among infants and children. Milk may be added as early as January 1996, which will require a separate sampling system.

ERS will complete two studies using PDP data. The first addresses sources and incidences of residues in selected fruit and vegetable commodities, including links between residues and use. The second examines the adoption of Integrated Pest Management by commodity growers and its influence on pesticide use.

■ Summary of Data for Calendar Year 1993

The increased number of pesticides routinely monitored by PDP has led to a higher number of residue detections. In some cases, residues of several pesticides were found in individual samples; however, most of the detections were at very low levels --substantially below tolerances. For example, 94 percent of all detected residues were below 1 part per million (ppm), 60 percent were below 0.1 ppm, and about 10 percent were below 0.01 ppm.

Of the 7,328 samples collected and analyzed in 1993, 114 violative residues were found in 110 of the samples (100 of these residues have no established tolerances). Of the 110 sample violations, 30 were detected in imported samples and 80 in domestic samples. The 1993 data also indicated that post-harvest fungicides and growth regulators contributed significantly to the number of residues detected in bananas, grapefruit, oranges, and potatoes, and, to a lesser extent, apples. Post-harvest applications accounted for 3,441 of the 10,329 residues detected.

■ Program Synopsis

PDP supports EPA's dietary risk assessment studies by providing quality data that meet statistically defensible criteria. PDP has: 1) altered the residue testing profile and pesticide use surveys to meet the needs of EPA as requested, especially for compounds requiring individual testing methods; 2) added diversity in the types of commodities tested; 3) responded to issues confronting the Government that involve the quality and scope of pesticide residue data; and 4) adapted to meet the varying needs of users of the PDP residue and use databases. USDA is confident this program is generating the data needed for making decisions on food safety issues and address public perceptions concerning the safety of the Nation's food supply.



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